



Fall 1996 Meeting for the Systemic Initiatives

Conference Summary







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INTRODUCTION

On October 31-November 2, 1996, representatives from more than 60 of the systemic initiatives met in Washington, DC. The purpose of the meeting was to provide opportunities for the conference participants to share information and learn from each other.

This report summarizes the common ideas and major themes that arose from the conference. First, the conference structure is provided. Following that, the body of the report details information participants shared with each other in small group sessions.

The theme of the fall meeting was *Driving Beyond the Philosophy: Systemic Reform in the Classroom*. The expectation for the conference was that all conference participants would leave the conference with clearly articulated plans that included their roles in making educational reform a reality in the classrooms at their respective sites.

The conference agenda provided for daily meetings of participants as a total group as well as for opportunities to meet in a variety of small group sessions. These small group sessions included job-alike groups, individual site teams, groups based on geographic regions, and NSF program groups. The small group meetings were organized so that the participants would move their planning from the most immediate level (job-alike groups) to the grand scale of the program level.

CONFERENCE STRUCTURE

Dr. Luther S. Williams, Director, Education and Human Resources Directorate, opened the meeting by presenting some salient issues surrounding the systemic initiatives. He stressed the importance of providing evidence of progress or showing the impact of the site's activities on student achievement in the form of aggregatable data. He stressed that future research in the science, mathematics, and technology education fields should advance the knowledge base, inform practice, and tell practitioners more about how students learn. He discussed the Centers for Excellence for Research, Teaching, and Learning (CERTLs) as a means for capacity building, because teachers and students may do research at these centers.

Dr. Williams introduced Dr. Manuel Gomez of the Puerto Rico SSI, who described the strategic plan for his site. Dr. Gomez showed how, by the coordination of all systemic activities, synergy may be achieved. Dr. Diane Briars, Mathematics Specialist for the Pittsburgh Public Schools, challenged participants to learn more about and use standards-based assessments. She was followed by Dr. Harry Reynolds, Superintendent of the Chattanooga Public Schools, who encouraged participants to take a long hard look at the program that they had for students—all students.

Following this plenary session, participants worked for the remainder of the day in small groups (20-30 persons) organized by job title. The following groups convened

- PIs/PDs from school districts,
- 2) PIs/PDs from state departments of education,
- 3) PIs/PDs from universities and other organizations,
- 4) superintendents/commissioners,
- 5) teachers,
- 6) mathematics curriculum specialists,
- 7) science curriculum specialists,
- 8) professional developers,
- 9) assessment/research/evaluation specialists,
- 10) program coordinators, and
- 11) principals.

Led by facilitators, participants discussed their role in bringing reform to the classroom within the context of their site's strategic plan for the coming year.

The second day began with a plenary session featuring a panel of principals who attended summer institutes such as The Harvard Principals' Institute for Science and Math (PRISM) and The Gateway Institute of Technology. They shared lessons learned about bringing reform to the classroom to increase student learning. Following this session, participants met with their fellow site team members and their NSF program officers to review the results of their discussions during the previous day and clarify how they would work together to impact the classroom.

In the afternoon, Dr. Judy Sunley from the National Science Board addressed the conference regarding the systemic initiatives and their challenges. She reminded participants that they needed to be active in all of the components of systemic reform. She also stressed that they needed to be creative about getting more funding after NSF's seed money was gone. Following her presentation, teams met in regional clusters, with the support of facilitators, to discuss how they might partner and share in the process of supporting reform in the classroom. The regional clusters were Northeast, New York/Puerto Rico, Mid-Atlantic, Ohio, Midwest, Appalachia, Southeast, Delta, Texas, Four Corners, High Plains, and California.

The second day ended in a resource fair where technical assistance providers were available to discuss the supports they could offer for bringing reform to the classroom. Demonstrations were also provided on how to use the World Wide Web to gain information and to network with other educators.

On the third and last day, participants met in groups defined by the systemic programs: Comprehensive Partnerships for Mathematics and Science Achievement (CPMSA), Rural Systemic Initiatives (RSI), State Systemic Initiatives (SSI), and Urban Systemic Initiatives (USI). Program officers led the discussion of common problems, challenges, and strategies for overcoming obstacles to successful classroom reform. In the final session of the conference, Dr. Luther S. Williams made closing remarks and responded to questions.

CONFERENCE FOCUS AREAS

The body of this report is devoted to the insights and ideas shared in small group sessions. These small group sessions included job alike groups, individual site teams, groups based on geographic regions, and NSF program groups. The first section summarizes participants' views on the status of reform at their sites and their concerns regarding implementation. Following that is a section regarding sites' best practices in major reform areas such as assessment and curriculum development. The last section summarizes participants' conclusions and recommendations.

Status of Reform

Participants were asked to assess their sites' progress to date using a 6-point scale. At the lower end of the scale were maintenance (Level 1), awareness (Level 2), and exploring (Level 3), and at the higher end were transitioning (Level 4), developing (Level 5), and predominance (Level 6). In general, most participants reported that their sites are in a period of transition (Level 4). Many have gone as far as they can under old systems and are in the process of implementing new models of schooling or new instructional programs. Several other sites are at the developing stage (Level 5) and are focusing current efforts on infrastructure issues such as exploring "reform-friendly" policy development, initiating bond issues, or creating new alliances and partnerships.

Participants based assessments of progress at their sites on observations such as

- 1) more active learning is visible in classrooms;
- students, parents, and teachers can speak about the changes;
- 3) meaningful professional development is taking place; and
- 4) school programs and activities reflect a new and more coherent focus.

However, the work is far from over. Participants listed many concerns during the meeting, with the top three areas of concern being

- 1) student assessment,
- 2) professional development of teachers, and
- 3) external influences that are beyond participants' control.

Participants view these as the biggest challenges in the reform effort. The first two areas were common to most participants, whereas the third area—external influences—surfaced at some sites, but not others.

We are the only industry that tries to reform on line. It's like driving a car at 100 mph down a highway and trying to fix it at the same time.

— Conference participant

Student Assessment

Assessment was undoubtedly the biggest concern of most participants. When asked to list their most important classroom needs, project directors from school districts noted that their teachers and students needed assessments that would inform instruction. Teachers and other local educators echoed this need and added that they wanted to be sure that they collected data that would be used to improve the quality of program activities. Principals agreed, saying that they wanted assessments developed that would align with their curricula.

Research specialists listed and discussed many activities that needed to be done in the area of assessment. Some activities are

- 1) using norm-referenced tests for pre-post comparisons,
- 2) using performance assessments for some grades,
- 3) aligning assessments with the curriculum, and
- 4) using multiple measures of achievement.

They added that data then needed to be disaggregated by socioeconomic status, race, and gender. Finally, they said that teachers, parents, and other local community members need to be involved in test development. However, participants, especially teachers, expressed concerns about how to use norm-referenced tests to measure change in a standards-based environment. Teachers' main concern was that students are being taught with new approaches, but that their achievement is still being measured by traditional instruments. Project Directors from universities raised concerns about standardized tests-saying that the items on these tests are not "reform items" – and raised the hope that the tests will change as systemic reform proceeds. Mathematics curriculum specialists questioned what new performance indicators would look like.

Professional Development of Teachers

The second biggest concern of participants was the professional development of teachers. Project directors from districts talked about teachers who would not change their behaviors. Barriers to reform included various institutional policies and procedures such as teacher unions, teacher evaluations, and credentialling.

Science curriculum specialists expressed concern that new teachers in districts are often assigned to the worst schools and/or the hard-to-serve students. They added that it is hard to attract good science teachers in the first place, and equally hard to keep them because of their difficult placements. Teachers who have been in the district for a longer period of time have difficulty accepting new practices.

The science specialists want to find what causes teachers to lose interest in their teaching and how this outcome can be prevented. They want to obtain more supplies and resources and get teachers to use manipulatives. Mathematics curriculum specialists also discussed the need to find exemplary practices. One of their main tasks, they feel, is updating teachers into new ways of standards-based teaching and learning. This task could be aided by different policies, better evaluation of text materials, electronic field trips, and evaluation support, among others.

Professional developers emphasized that professional development takes more time than is usually anticipated. Also, no one is really good at assessing either the need for, or the effectiveness of, professional development.

Professional developers added that further barriers to developing teachers include politics, inflexible board of education members, and teachers who leave teaching altogether once leadership teams are developed. District superintendents said that attention needs to be paid to restructuring school time to allow for more professional development during school hours.

External Influences

Schools today face many challenges, and some of the challenges are beyond their control. Urban district representatives said that they do not know what to do about challenges to learning such as lack of nutrition, violence, and the increasing diversity of their student populations. Project Directors from districts agreed, saying that the biggest challenges to change were inequities among racial, cultural, and income groups. Many districts have large turnovers of students, teachers, and administrators coupled with a lack of instructional materials and teachers who have limited command of content, pedagogy, or the appropriate use of technology.

In rural areas, factors such as inclement weather limit accessibility for vehicles and long distances present many challenges. Many districts have to work with parents who resist new methods of teaching and learning. Others face dramatically shifting political environments and forces such as conservative coalitions that appear to resist educational reform.

Where we choose to focus our questions often identifies where we are seeking to place responsibilities or problems.

Conference facilitator

Best Practices

In the small group sessions, participants shared their best practices in the areas of

- 1) assessment,
- 2) curriculum alignment and development,
- 3) instructional materials and strategies,
- 4) equity,
- 5) professional development,
- 6) collaboration among educators,
- 7) community partnerships, and
- 8) restructuring.

Some of these practices are described below; when available, the area and site are included.

Assessment

Most sites are working to align their assessments with standards with local, state, and/or national standards. In Texas, educators are making an effort to develop consistency between the state standards and the state student assessment. The Texas, Maine, and Kentucky SSIs gave credit to their statewide assessments for encouraging the learning of content by teachers and for leveraging policy. Alaska's RSI is piloting scoring guides for assessments based on the national mathematics standards, and Philadelphia's USI has instituted new assessments in which the items are standards-driven.

Other best practices in assessment reported by sites include the development and implementation of new approaches such as using performance-based assessments. The New York City USI reported that they are implementing a city-wide performance-based assessment and that they are currently developing rubrics. The Louisville CPMSA said that they are using performance events, open response items, and mathematics portfolios at all levels throughout the state. Memphis is piloting performance assessments, and the Massachusetts SSI is developing a standards-based performance assessment. Many participants remarked that when teachers work to develop new assessments to measure new kinds of learning, both teaching and achievement improve.

Curriculum Alignment and Development

As with assessments, sites are working to align their local curricula with state and/or national standards, and to integrate math and science curricula as much as possible. The Louisiana SSI reports that the Louisiana state mathematics standards have been totally aligned with the NCTM standards. The Surrey County Consortium CPMSA is trying to align their curricula with Virginia state Standards of Learning and with national standards. They have a collaborative project with an Eisenhower-funded program to complete their K-12 curricula this year and are looking at integrating middle school science according to the NSTA scope and sequence model. At the Los Angeles USI, they now have a totally integrated K-12 curriculum. In younger SI cohorts, there have been efforts to integrate the mathematics curriculum (Hartford CPMSA, East Side CPMSA).

In the Chicago USI, curriculum framework statements have been developed for each grade level in the areas of mathematics, science, and language arts. They are being used in draft form in every classroom in the district and will be revised based on feedback from teachers. The Massachusetts SSI has helped to develop state frameworks called "Achieving Mathematical Power."

Superintendents at various sites report that curriculum development is enhanced by having school-wide programs focused on specific themes such as technology education, health education, or literacy. Other advances in curriculum development come through the adoption of research-based instructional programs such as New American Schools, the School Effectiveness model, and the Comer program. Finally, many superintendents report that they are replacing programs of remedial instruction with curricula that expose all students to higher quality mathematics and science and holding all students to a higher standard of performance.

Change in student achievement may be the most important outcome, but it is by no means the only one.

—Conference participant

Instructional Materials and Strategies

Mathematics curriculum specialists from all around the country stressed the need for equipping students with scientific and/or graphing calculators. The New York City USI has provided calculators to every student in the district. In the Baltimore USI, teachers receive their curriculum via computer.

Sites in older cohorts such as the Baltimore USI and the Massachusetts SSI have worked hard on instructional strategies that integrate technology with mathematics, science, and other curriculum areas. Participants reported that in New Orleans principals are signing up for algebra courses, because they want to renew their own algebra skills and because the courses are made so interesting with new instructional strategies.

Equity

A number of sites have been using magnet schools to promote equity through integration of populations based on interest in a subject area. Other participants suggested that *all* schools in a district have some kind of magnet theme, and the Massachusetts SSI added that they have instituted a policy of high quality for all. Colorado's SSI reports that their state has totally de-tracked courses, and it has done away with lower level courses.

Many of us have all the skills—we have all the pieces [to reform mathematics and science instruction in the classroom] but there is the final choreography of the dance that the teacher finally weaves together... a dance that is good, wholesome, educationally exciting...

-Conference participant

Many of the efforts in equity seem to center around having most or all students take algebra (Louisville, Birmingham, Hartford, and Normandy School District, St. Louis, MO, CPMSAs). However, the Normandy School District discovered that trying to get all students to take algebra was only half the battle. What they were challenged with next was the danger of 10th grade students dropping out or not having enough credits to graduate from 12th grade. They tackled this problem by having teachers give up their time, even on Saturdays, to tutor students, and by doing so, the district increased the percentage of 10th grade students with enough credits to graduate from 49 percent to 70 percent.

Professional Development

Many sites use and recommend teacher-to-teacher training or peer teaching. Also, participants recommended that professional development be

- 1) long term,
- 2) locally driven,
- 3) creative, and
- 4) interactive.

Superintendents said that they were increasing the requirements and days of professional development for their teachers so that they would understand the principles of standards-based reform.

Sites in older cohorts such as the California SSI and Los Angeles USI endorse the "teachers teaching teachers" model for professional development. The Philadelphia USI is working on the development of teaching and learning networks—among teachers, with universities, with partner organizations, and with other school districts. The Appalachian RSI arranges for teachers to be released from their classrooms for professional development and to assist other classroom teachers.

The Kentucky SSI and the Philadelphia USI provide teachers with leadership training so that they may train others.

These teachers are deployed to every region of the state and district, respectively. The Memphis USI has provided 900 teachers with training in the "Pacesetter Math" program, over the past two summers. The program has been implemented in 17 middle schools and 20 elementary schools.

The Dallas USI has been working with the Council for Basic Education to strengthen the role of their principals as instructional leaders and help teachers approach mathematics and science in ways consistent with the new standards.

The South Carolina SSI has created a teacher peer coaching program, and the Massachusetts SSI and Winston-Salem CPMSA have initiated teacher leaders who help promote mathematics, science, and technology with other teachers in their district. In Massachusetts, the practice has been expanded to regions throughout the state.

Sites in younger cohorts also realize the importance of professional development in standards-driven reform. They have used mentor teacher strategies (San Antonio USI) or instituted a summer teaching laboratory institute model where minority and non-minority teachers are paired (Newburgh, New York CPMSA).

Collaboration Among Educators

Most principals agreed that collaboration among educators is essential to reform. The rewards of collaboration have included providing teachers with more efficient ways to schedule and plan for the integration of mathematics and science into content areas and with time to share ideas at weekly staff meetings and monthly grade-level meetings. In addition, principals have implemented cluster meetings with other principals and/or a variety of educators to share ideas and resources, and some schools are restructuring their work week to give teachers more time to collaborate. The general consensus was that educators must talk more to each other. The Alaska SSI has made an annotated bibliography of resources on the Web, based on mathematics and science standards.

Community Partnerships

Many sites have created partnerships and linkages with such entities as universities, museums, businesses, and publishers, to name a few. University partnerships help with teacher training and support. Partnering with community institutions such as museums, galleries, and zoos helps to expand and enrich opportunities for mathematics and science learning to take place in informal settings. Partnerships have been developed between schools and businesses to promote school-to-work programs, shadowing of employees by students, technological training for teachers, and student recognition awards for excellence. In addition, input from businesses will help determine what skills and technology are necessary to learn in order to become part of the workforce. Partnerships also produce mentors, equipment, and funding, among other benefits. One unique partnership that the New York USI has created is with the New York Yankees.

The Baltimore USI partners with Morgan State University. Morgan State has been the leader in running institutes for teachers to that the teachers may gain more content strength and integrate technology into mathematics and science. Morgan State also is cooperating with other area universities to gather all of the deans of education together to address preservice teacher problems. Future plans include computer networking the Morgan State Department of Education with public school mathematics and science departments.

Clearly the most important partnership is the one with parents. Many sites reported having family mathematics and science nights. These hands-on opportunities have been shown to be very valuable in helping parents understand the new ways of teaching and learning. Some districts have been so bold as to give parents rubrics to score student work so that they can see good examples first hand.

Dade County USI staff provide weekend tutoring programs at libraries. At these sessions, parents and children participate in hands-on mathematics and science activities. Dade County USI staff also conduct outreach programs at local churches. The Denver CPMSA used part of its grant to set up the Little Shop of Physics—a traveling science museum. When parents and community members stop by, students explain exhibits to them.

Restructuring

There was general agreement among sites that the vision for what happens in the classroom must start with the teachers. However, most would be quick to add that in order to sustain change, stakeholders at all levels must be involved-and involved early on. District administrators can take action to provide effective direct support to schools undergoing standards-based reform. For example, they can restructure the central office and reallocate central office staff so that they have more direct responsibility for and to schools. Administrators can create new positions or new divisions within the central office whose missions are specifically to assist schools with issues involved in implementing needed changes. One district created an office of systemic reform to work with schools. Another created a new curriculum supervisor's position so that a single staff person in the central office now oversees development of all standards-based curriculum documents.

Sites gave more specific examples of changing structures to aid reform. The New York USI created a magnet school of mathematics inquiry. The Birmingham CPMSA provided for mathematics and science clubs and extended day programs where high school teachers go into middle schools and tutor students. Birmingham also is providing Saturday sessions where high school students can receive help in preparing for the ACT. The Milwaukee and St. Louis USIs are working hard to establish communities of learners at the classroom, school, and district levels. They are using constructivist models to bring all isolated activities into a coherent whole.

Conclusions and Participant Recommendations

Throughout the conference, participants worked to amplify strategic plans for their sites. Many of the plans started with a common theme: unity of purpose, action, and support for all desired outcomes. Many participants agreed that systemic change will not move forward without unity and shared goals, within and among sites.

What are some of these shared goals? Participants said that they wanted to take some of the best practices that they had heard at the conference and add them to their already successful practices. They wanted to take a closer look at the teaching that is taking place and make sure that students are successful in well-taught, standards-based courses. Participants want to analyze, report, and interpret project data.

Participants stressed the need to communicate with other systemic change groups. Collaboration should take place across all kinds of sites, depending on what is needed, e.g., professional development, public outreach, etc. Participants want to invite others to demonstrate new curricula or instructional techniques such as Complex Instruction or Discrete Mathematics. Also, participants want to keep abreast of activities of regional and national meetings.

Many cooperative regional approaches were suggested. One common suggestion was to make connections with the regional laboratories of the U.S. Department of Education (ED) for help with assessments. Other participants suggested that sites make combined appeals for technical assistance to other organizations such as the recently organized ED Regional Alliance (NETEC) in New York State or the Technical Education Research Center (TERC) in Cambridge, Massachusetts.

Program coordinators said that they could help to leverage and link other sources of funds and resources as part of their role. One session participant noted that the Kentucky SSI has begun moving in the direction of creating statewide partnerships and getting those partnerships down to the schools.

At the national level, it was suggested that NSF identify and provide a coordinated list of all sister agencies that sponsor education programs and activities. That way, systemic changes would be easier to fund and implement.

Specific Suggestions

The Delta region added some more specific suggestions to some general goals and actions. For example, if a site's goal was to align the curriculum with national standards, and the action towards meeting this goal would involve developing a curriculum document, perhaps staff should look at, for example, Vermont's document (also available on the Internet—vismt.uvm.edu). If a site wanted to ensure that all elementary teachers were implementing a high quality, standards-based curriculum, they might want to identify resources or find a clearinghouse. The McREL (Mid-continent Regional Educational Laboratory) clearinghouse was suggested and is available at WWW.MCREL.ORG.

The Texas regional group also listed some specific collaboration activities. First, they suggested holding regional meetings once or twice each year to focus on specific issues. Next, they recommended making optimal use of the SSI web site, for example, creating a list serve to publish announcements, resource lists, exemplary sites willing to host visitors, etc.

Along that line, Texas participants proposed making coordinated use of the SSI as a clearinghouse and dissemination arm. Suggestions were made for inviting other sites in their regions to key program events such as pilot testing and dissemination activities. Finally, it was proposed that all science planning and activities be coordinated in a region so that one site would take on responsibility for development in a particular topic area (e.g., middle school science, 11th grade biology, etc.).

Not surprisingly, teachers had the most specific suggestions. They recommended that performance-based assessment tools be developed that could be used throughout the year; that an instrument be created that validly measures what is being taught; and that someone find professionally developed performance-based materials for regular classroom planning and use. In curriculum development, they asked that a clearinghouse of research be created to show what is working well, and that all educators insist on uniform standards from the local level on up to the states and nation.

Teachers' recommendations to improve equity included

- 1) making sure that all schools have equitable equipment and supplies,
- providing state-of-the-art computers and laboratories in all schools,
- 3) increasing awareness of administrators, parents, teachers, and students that inequities exist,
- identifying successful programs that have narrowed the gap in mathematics and science achievement for all students,
- 5) assuring that funds are disseminated for mathematics, science, and technology in all schools, and
- 6) providing access to college prep courses for underrepresented or non-college-bound students.

Technology training is needed for teachers. Teachers said that they wanted to learn to find materials better on the Internet and have access to a database of resources. Other instructional materials they wanted included more hands-on materials and manipulative supplies for the classroom. In the instructional strategies area, teachers said that successful, innovative practices should be disseminated. They stressed student participation in the planning and evaluation of learning and the use of peer tutoring. Teachers recommended that professional development programs link to teacher education programs at universities and implement ideas over a period of time, rather than serve as one-shot experiences. They added that teachers should take responsibility for their own professional development, e.g., join local and national organizations.

Teachers' suggestions for partnerships included the following:

- 1) teach parents the use of technology for use in the home;
- teach parents class content and how to do simple experiments;
- teach parents to ask their children "why" in daily situations;
- provide homework kits and training for parents at backto-school nights;
- 5) develop and disseminate strategies to get businesses more actively involved in the school;
- 6) make positive contacts with the home;
- 7) develop relationships with universities and government agencies; and
- 8) find creative ways of communicating with families who do not share a common language with staff.

Finally, teachers recommended some policy changes. They said that their districts should begin preparing teachers for NSF reform programs before the funding is granted. Teachers who are reluctant to accept reform policies should be mentored and encouraged. Teachers also need assistance in writing proposals for new programs. Also, if teachers are to collaborate effectively, they need more time during the day, which would necessitate new scheduling practices.

Future Conferences and Technical Assistance

The importance of teachers, and their participation in the reform, came up in several of the sessions. At the SSI program session, participants suggested inviting 450 of the nation's best teachers—equally distributed among those who teach at elementary, middle, and high school levels—to be the nucleus of a future conference. The teachers would come not to be "trained," but to be listened to.

Other ideas for future conferences included building a conference around procedures that states have developed that work. For example, a district that collaborates particularly effectively with parents or a state especially expert in gathering data could be highlighted.

Participants asked that at the next conference there might be more showcasing of positive impacts; for example, students and/or parents might be asked to come and speak; there might be videos of classrooms; case studies might be disseminated. Participants also asked for more practice on the use of data or indicators of progress.

Finally, participants would like to know more about the scope of each of the programs' efforts—the SSIs, RSIs, USIs, and CPMSAs. They wanted to know how the four connect as a national effort, how long they have they been funded, what they do, and where they all are along the road to reform. Next, participants wanted to know what part each participant plays, and what kind of technical assistance is available from the Westat*McKenzie Consortium.

Participants asked for technical assistance in the following broad areas:

- program evaluation—how to demonstrate success beyond collecting test data;
- professional development—how to design a comprehensive system;
- 3) regional scale-up;
- 4) sustainability and grant writing; and
- 5) equity.

Overall, participants gave the meeting high marks. They found the plenary sessions very instructive and the small group sharings valuable. Participants commented most frequently on the job-alike sessions; it was in these sessions that they felt they could share the most about their work and glean ideas from others doing similar work.

